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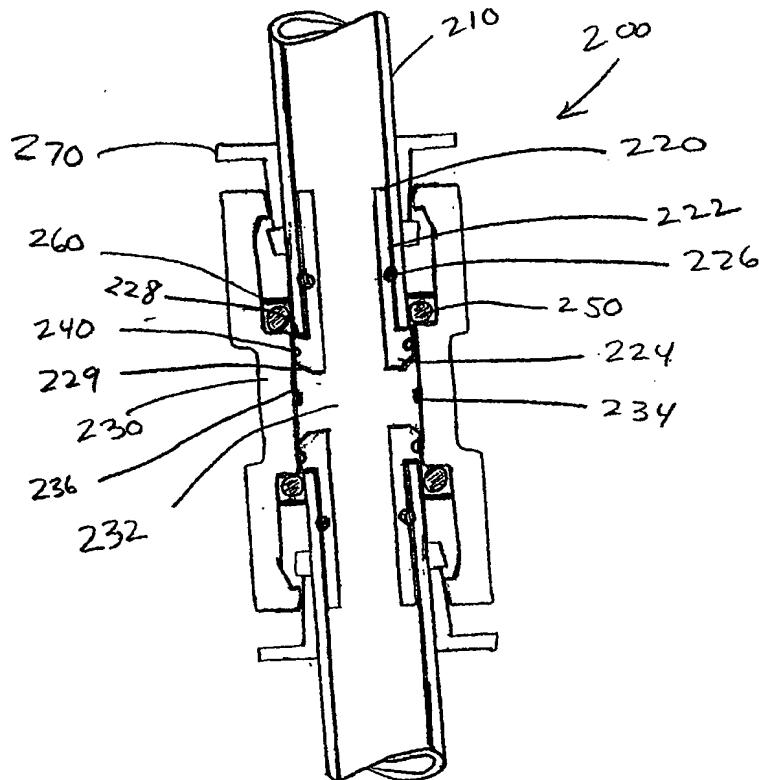
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(54) Title: INTEGRALLY HOUSED TUBE INSERT



(57) Abstract: A tube coupling that has a tube insert (220) which is integrally housed within a coupling body (230). The tube insert (220) is partly comprised of an elongated stem (222) encircled by a sealing o-ring (226) that forms a seal with a tube (210) inserted into the coupling body (230) and over the tube insert (220).



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## Claims

What is claimed is:

1. A tube coupling, comprising:  
a tube insert having an elongated stem encircled by a first sealing o-ring; and  
a coupling body integrally housing the tube insert.
2. The tube coupling of claim 1, wherein the coupling body has an annular tube insert stop along an inside wall of the coupling body, such that the tube insert stop prevents inward movement of the tube insert within the coupling body.
3. The tube coupling of claim 2, wherein the coupling body has a retaining disc that prevents outward movement of the tube insert from the coupling body.
4. The tube coupling of claim 3, wherein the tube insert has a base having a leading end and a trailing end, wherein the leading end is tapered to facilitate passage of the base through the retaining disc and the trailing end is blunt to prevent outward movement of the base through the retaining disc.
5. The tube insert of claim 4, wherein the base has a freedom of movement between the retaining disc and the insert stop.
6. The tube coupling of claim 1, wherein the first o-ring is molded to the elongated stem using a rubber transfer molding technology.
7. The tube coupling of claim 1, wherein the tube inset further comprises a base encircled by a second o-ring that simultaneously bears on both an inner wall of the coupling body and an outer wall of the base.
8. The tube coupling of claim 7, wherein the second o-ring is molded to the base using a rubber transfer molding technology.
9. The tube coupling of claim 1, wherein the tube inset and the coupling body are molded as a single unit.
10. The tube coupling of claim 1, wherein the elongated stem has an outside diameter substantially equal to an inside diameter of a tube.

11. A coupling system, comprising:  
the tube coupling of claim 10; and  
the tube, installed such that the first o-ring simultaneously bears on both an inner wall of the tube and an outer wall of the elongated stem.
12. The coupling system of claim 11, further comprising a third o-ring that bears on an inner wall of the coupling body and an outer wall of the tube.
13. The coupling system of claim 11, wherein the elongated stem extends at least 1 cm. into the tube.
14. The coupling system of claim 11, further comprising a collet with resilient arms that extend into the coupling body and therein close on the tube when engaged by a tapered cam.
15. A method of fluidly sealing a tube in a coupling body, comprising:  
providing a coupling integrally housing a tube insert freely moveable between a tube insert stop and a retaining disc;  
providing a first o-ring encircling the tube insert; and  
pushing the tube over the tube insert such that the first o-ring simultaneously bears against both an interior wall of the tube and an exterior wall of the tube insert.
16. The method of claim 15, wherein the step of integrally housing is facilitated at least in part the retaining disc.
17. A boat comprising the tube coupling of claim 1.
18. A method of advertising, comprising:  
providing a tube insert having an encircling o-ring; and  
instructing on how to integrally house the tube insert in a coupling.
19. The method of claim 18 wherein the step of instructing further comprises providing a product insert.
20. The method of claim 18, wherein the step of instructing further comprises posting instructions on a web site.